Coronavirus – tracking the path, anticipating the impact

Central banks and markets await the evolution of the outbreak

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Key points

- A new coronavirus emanating from Wuhan, China has infected over 40,000 people, mainly in China, and killed more than 900[1]. It is still too early to judge how widespread an outbreak this ultimately prove.
- The impact is likely to exceed that of SARS in 2003. This reflects the greater size of China's services sector and the country's deeper integration in the global economy. Were SARS to be repeated now it would likely reduce global GDP growth by 0.25ppt, compared with 0.1ppt in 2003.
- A prolonged outbreak in China over a couple of quarters would prompt a bigger global impact, estimated at around 0.5ppt. Global trade would increasingly be disrupted, undermining hopes for a post-trade-deal recovery, particularly in Europe.
- A prolonged outbreak would also likely result in policy easing (monetary and fiscal) in China, and in close neighbours, including Singapore, Korea and Indonesia.
- A sustained spread beyond China would significantly increase the global impact. An illustrative scenario with production shutdowns, travel restrictions and lost working days could deliver a global impact of 4-5ppt. This would result in global recession and would require policy responses in all jurisdictions.

Plausible paths for a fast-moving crisis

Just over a month since the new coronavirus – known as 2019-nCoV – was officially recognised there is only so much we can say about its likely impact. However, we can examine some plausible scenarios, and in the following note, we set out our first thoughts on what this virus could mean for the global economy. We use data presented by the World Health Organisation (WHO) and refer to its preliminary estimates on reproduction and mortality rates in our analysis. We are mindful that as with any outbreak there are significant challenges involved in estimating the numbers infected in the initial stages, especially with a virus that appears to be spreading so quickly. Moreover, we are aware of epidemiological models that wildly diverge from official reports of confirmed cases[2].

With these cautions in mind, we first consider China and provide initial impressions of the potential effect different future paths for the outbreak could have on growth in the world's second largest economy. We then broaden our thoughts to look at the likely impact of various scenarios on the rest of the world. These include economic spill over effects if the virus proves more persistent and damaging for China's economy, and direct impacts should 2019-nCoV spread significantly beyond Chinese borders.

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[1] "Novel Coronavirus(2019-nCoV) Situation Report – 20" World Health Organisation 10 February

[2] Wu, J., Leung, K. and Leung, G.M., "Nowcasting and forecasting the potential domestic and international spread of the 2019-nCoV outbreak originating in Wuhan, China: a modelling study", The Lancet, 31 January 2020. This suggested models of 75,000 cases in Hubei at a time when only 1,000 were reported.

Our aim is neither to provide a forecast of which scenario the virus will follow, nor to provide spot forecasts of the impact of each scenario – the confidence intervals around economic estimates at this stage are large. Rather we aim to present a number of reasonable scenarios that the virus might follow. Given the current expected growth rate of confirmed cases, we should know within a matter of weeks whether the virus is likely to be contained in the Hubei province, in China more broadly, or whether it is likely to spread to the rest of the world. We will judge this when the growth path of confirmed cases begins to level off on a persistent basis – with some tentative evidence that this might already be happening. We also aim to give broad, order of magnitude assessments of the impact of each scenario, in terms of an economic impact and any expected reactions from regional authorities and financial markets.

In summary, we consider a quickly contained virus – as we saw with Severe Acute Respiratory Syndrome (SARS) – would lower global growth by around 0.25 percentage points (ppt), while a more prolonged outbreak, but still largely contained to China, would likely double that negative impact to -0.5ppt. A more widespread outbreak of 2019-nCoV could plausibly result in a 4-5ppt reduction in global GDP.

A new virus for the 2020s

From the first reported cases on 31 December 2019, the spread of the new coronavirus has been rapid. Exhibit 1 illustrates the growth of reported cases – for now mainly in China – which has soared to exceed 40,000 at the time of writing. The rapidity of the outbreak and the Chinese authorities' actions to try and tackle it have brought several comparisons with other viral outbreaks seen over the past decade, including Ebola, Middle Eastern Respiratory Syndrome (MERS) and H1N1 (swine flu). However, given the scale of impact, most comparisons have been drawn with SARS which struck China and South East Asia in 2003. SARS was estimated to have reduced Chinese GDP growth by 1ppt in 2003, and global growth by $40bn[3] (0.1%).

It is clear that no two outbreaks will be identical. A glance at Exhibit 1 shows the much faster spread of 2019-nCoV compared to SARS, and questions how relevant the comparison will ultimately prove. In addition, the estimated mortality rate of this new virus appears to be much lower than SARS[4]. Moreover, 17 years on, and after an intense period of economic change for China, its role in the global economy has also changed dramatically. China now represents 17% of global GDP from just 4% in 2003. Finally, the response from the Chinese authorities has to date been different – apparently more determined and more transparent than was the case in 2003.
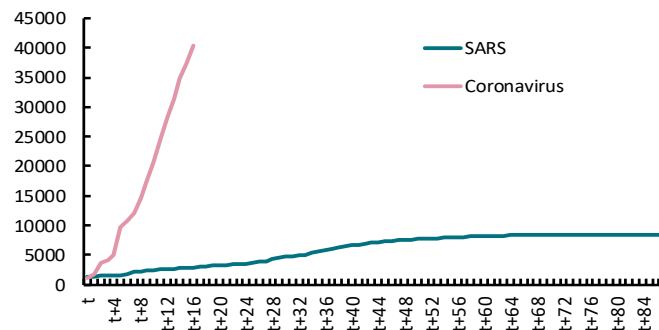
We believe we can only learn so much from a simple comparison with previous viral outbreaks.

Exhibit 1: Growth of reported cases

Spread of virus from 1000 cases

Source: WHO and AXA IM Research, 10 Feb 2020

China – the epicentre of global import

Last week, we published a research note detailing our first thoughts on the impact of 2019-nCoV on the outlook for China alone[5]. This paper discussed the significant measures that the Chinese government has put in place to control the spread of the virus from its epicentre of Wuhan. Exhibit 2 illustrates that confirmed cases in China continued to accelerate into February before showing tentative signs of a slowing. It is also noteworthy that most new cases have remained in the severely affected and strictly controlled area of Hubei province itself.

Exhibit 2: Confirmed cases in China

Novel coronavirus confirmed cases - China
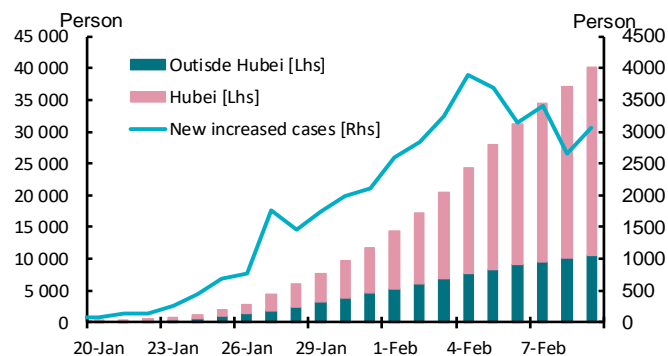
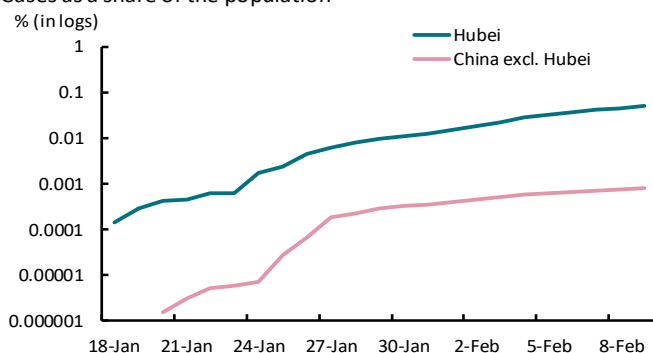Source: WHO and AXA IM Research, 10 Feb 2020

It is still too early to say with any confidence how the virus will continue to spread. Dr Zhong Nanshan, the head of an expert panel leading the Chinese containment efforts, suggested in January that 7 February would be a critical moment to determine whether the virus was being successfully contained. Exhibit 3 shows the number of cases reported as a percentage of the general population in China, *on a log scale*. The use of a log scale is most appropriate for considering multiplicative factors, or the fact that a virus with a reproduction rate of 2 should

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[3] Lee, J.W. and McKibbin, W.J., "Estimating the global economic cost of SARS", National Centre for Biotechnology Information, 2004.

[4] Early estimates from the World Health Organisation (WHO) suggest a mortality rate of 2, compared with a much higher rate of 9.6 for SARS.

[5] Yao, A. "Coronavirus: First thoughts on the potential economic impact on China", AXA IM Research, 4 February 2020.

be expected to grow in an exponential fashion (meaning that each infected person on average infects two others). The fact that, even in Hubei, we are seeing a flattening of the gradient of growth in cases suggests some deceleration in the pace of transmission, which is consistent with a more optimistic assessment of the ability to contain the virus.

Exhibit 3: Rate of change a cause for optimism

Cases as a share of the population

Source: WHO and AXA IM Research, 10 Feb 2020

We also note that the reported mortality rate appears significantly lower outside of the Hubei province than inside. The national mortality rate, according to the Chinese Ministry of Health, is 2.1% – broadly consistent with the WHO preliminary estimate. However, a breakdown suggests that this is made up of 4.9% in Wuhan, 3.1% in broader Hubei province, but just 0.16% outside of Hubei. Clearly such a large discrepancy in the mortality rate does not make sense, although we urge caution in placing too much weight on observed readings at a still-early stage in the virus. One explanation is that a shortage of medical supplies or poor initial management of the situation caused a higher death rate in Hubei. Another is that the actual number of infected cases is much higher in the Hubei province than officially recorded. The latter would be consistent with a higher infection rate in more densely populated regions.

We also note, however, that if China's efforts to contain the virus, including travel restrictions and holiday extensions, have started to contain the epidemic, the real test will come when those measures are lifted. Will the epidemic remain in check then? In other words, there may be a significant and persistent inverse relationship between measures to and success in containing the virus and economic costs associated with that containment.

With developments ongoing, it is difficult to suggest what path the virus might take with any confidence. We looked at three illustrative scenarios for the impact on China.

Optimistic quick containment. The disease is quickly controlled within a matter of weeks, similar to SARS. We estimate a larger-than-SARS shock to the economy (reflecting the greater share of services in the overall economy in 2020), of around 1.5-2ppt. However, the Chinese authorities

announce a bigger fiscal package at the National People's Congress in March, coupled with monetary policy easing: additional liquidity injections; targeted measures for small and medium-sized companies (SMEs); and cuts to the Reserve Requirement Ration (RRR) of up to 100bps. This sees a sharp rebound in activity from Q2, minimising the net deceleration of the economy. We lower our 2020 growth forecast to 5.6% from 5.8%,

Prolonged containment. The virus takes longer to contain and is spread more widely. Activity is disrupted by continued shutdown, through labour mobility restrictions and illness. Production is increasingly affected and there are more behaviour-based reductions in services output. Authorities are likely to provide further stimulus, although the positive impact on the economy would be delayed by efforts to contain the virus. The pick-up in activity would come later in the year and full-year 2020 growth would likely dip below 5%.

Broader spread. Chinese activity continues to be affected, increasingly by the impact of the virus itself – rather than by the containment efforts – with a rise in days lost through illness steadily constraining economic output. A broader spread beyond China would also have a material demand impact on the rest of the world, which would in turn affect the outlook for Chinese activity. Chinese authorities – along with global peers – would likely take increased measures to offset the shock. Nevertheless, this outlook could tip an already vulnerable global economy into recession.

Beyond China – impact and spread

In assessing the potential impact of 2019-nCoV on the rest of the world we must consider two distinct aspects. The increased significance of China in the global economy and in South East Asia, and the likely scale of impact the virus might have in China and beyond.

Annex A contains metrics which illustrate the influence and scale of impact that a slowdown in China could have on other economies. We consider the interconnectedness of trade, a key factor in the slowdown that accompanied both trade tensions and China's recent deleveraging. We also look at the interconnectedness of travel and tourism, as well as the relative size of each country's services and consumer sectors, which have proven vulnerable to measures to combat the spread of the virus.

A brief review of these heat maps suggests that Hong Kong will once again be highly susceptible to the impact of this virus on China. We also identify Thailand, Singapore and Korea as economies that look vulnerable to virus-affected China, in part reflecting the risks to consumer-related behaviour, but including the risk that a more persistent shutdown across China begins to have more of an effect on industrial output, impacting supply chains and creating a renewed downdraft on global trade.

Exhibit 4: Simple extrapolation of SARS in 2020

Potential impact of nCov to GDP
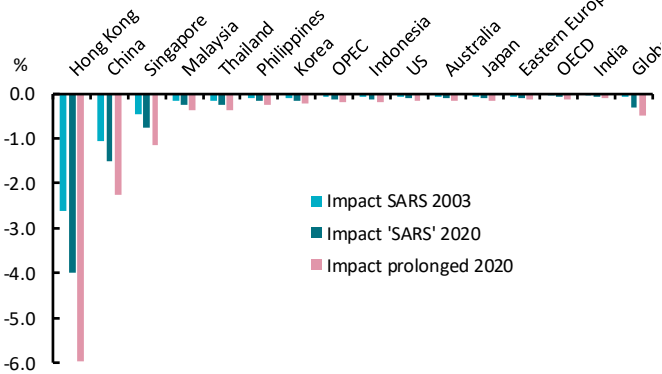
Source: Lee, J.W. and McKibbin, W.J., Datastream and AXA IM Research, 10 Feb 2020

Increased interactions in global trade, tourism and financial markets likely increase the degree of economic and financial spillovers that even a repeat of SARS would likely have for the global economy. Exhibit 4 illustrates the estimated economic impact of SARS on a number of economies in 2003. We extrapolate, allowing for the increased interconnectedness of China now, to estimate what a repeat episode would cost. We estimate a global impact on GDP growth of around 0.25ppt if SARS happened now, compared with the estimated <0.1ppt impact in 2003.

As we have suggested, the chances of 2019-nCoV being identical to SARS is small. Looking at different scenarios for China, we acknowledge a 'quick resolution' that could see a similar scale impact on the Chinese economy, however there are alternative scenarios that could see the virus proving more persistent, or a spread of the contagion beyond China.

Exhibit 5: Cases of 2019-nCoV in and outside China

Cases: China v rest of the World
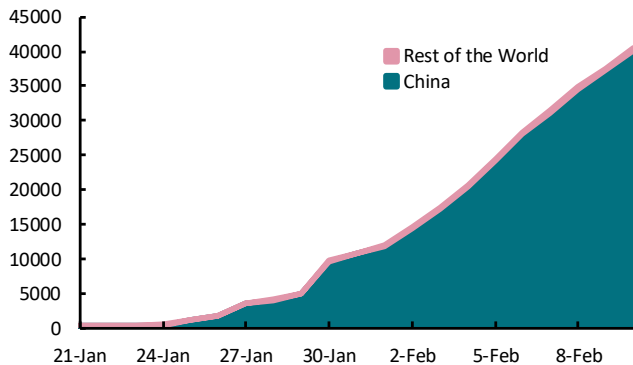
Source: WHO and AXA IM Research, 10 Feb 2020

The cited Lancet paper suggests estimates of the virus reaching a peak in late April/early May. We also note that despite the stiff measures enacted by Chinese authorities to contain the spread of this virus, there is only tentative evidence of it being contained in the Hubei region for now. The number of reported cases has continued to grow in other areas of China, where controls to restrict movement have not been so strict, nor implemented as quickly. This suggests that we need to consider a more material impact on Chinese GDP,

and larger spillovers to the rest of the world. Indeed, simply extrapolating from a larger, say 2.25ppt, impact on Chinese GDP for this year would suggest a global economic cost of nearer 0.5ppt.

Exhibit 6: Cases reported outside China

Cases across the world
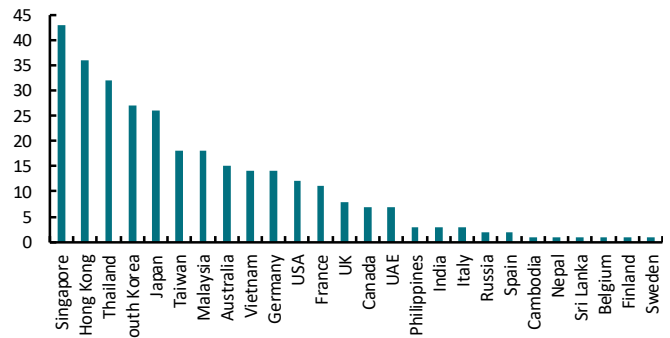
Note: Japan figure is excluding the Diamond Princess cruise ship
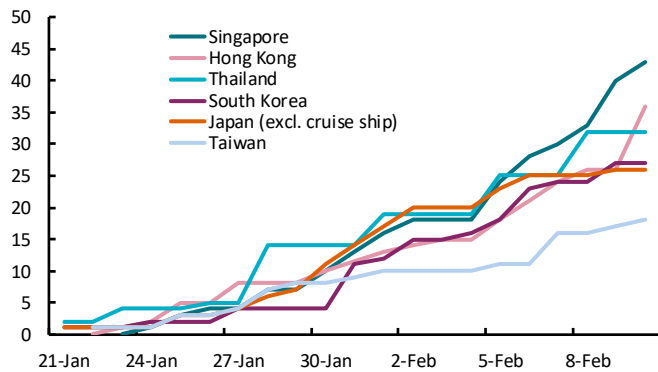Source: WHO and AXA IM Research, 10 Feb 2020

So far though, our analysis has been reserved to varying the persistence of the virus in China and therefore the scale of the economic shock in China, and then the economic spillover to the rest of the world. Such an approach seems valid for now. Despite the number of confirmed cases being in excess of 40,000, over 99% of these are in mainland China. Exhibit 5 illustrates the split of reported cases inside and outside China. Exhibit 6 shows a breakdown of the number of cases reported outside China – the significantly lower scale a testimony to the scale of difference. To date, there is little evidence to suggest a material problem beyond China.

Estimating the uncontained

For the same reasons that appear to have made it difficult for China to contain the spread of the virus within the Hubei province (the possibility of asymptomatic contagion and delays in mobility restrictions) we consider there to be a risk that the coronavirus is not contained within China. Indeed, data may be benign in the rest of the world because it takes time for the disease to spread and we are still only 42 days from the first official recognition of the virus. However, Exhibit 7 illustrates that even though the numbers are, for now, of a different order of magnitude in countries outside of China, the growth rate appears to be following a similar uninterrupted expansion suggestive of an effective uncontained spread.

In Annex B, we provide a heatmap of factors that we would expect to indicate the risk of the virus spreading to neighbouring economies, alongside the number of reported cases at the time of writing. For now, we simply present these as qualitative indicators of countries with an increased risk of seeing the disease spread. Over time, we might be able to test for statistical significance, if the virus spreads.

Exhibit 7: Cases reported outside of China continue to rise

Increase in cases abroad

Source: WHO and AXA IM Research, 10 Feb 2020

Estimating the impact of a virus that becomes a global pandemic is more difficult. The past few decades have provided evidence of viruses that have broadly been contained. However, beyond the usual seasonal flu that affects the globe, mitigated by natural immunity and developed vaccines, we have little precedent of the impact of a new coronavirus at large in the global economy. We consider two examples: Spanish flu (1918) and Swine flu (2009-2010).

Spanish flu is estimated to have killed between 40-50 million people in 1918. Its reproduction rate is estimated at 1.2-3.0[6] (and as much as 2.1-7.5 in confined settings). Its mortality rate was estimated at between 10-20% (with an estimate that broadly one third of the world's population caught the disease). Spanish flu was unusual in that the distribution of deaths was relatively high among prime-age individuals.

Swine flu (H1N1) is estimated to have killed between 152,000-575,000 globally[7]. Both the reproduction and mortality rates are estimated to have been lower than Spanish flu at 1.4-1.6[8] and 0.026% respectively. This suggests between 580-2200m people were infected by swine flu (8-32% of the global population) a mid-point that is consistent with the WHO estimate that at least one in five people globally were infected with the virus.

Early estimates of 2019-nCoV's reproduction rate is similar to Spanish flu at 2-3.1 (we might assume a similarly higher reproduction rate in confined settings). The early estimates from the WHO suggest that its mortality rate is a lower 2%, although as noted there are varying reports about this as the evidence grows. Initial reports suggested that 2019-nCoV appears more usual in affecting the old or young, or those with pre-existing medical conditions. However, the Lancet also reports that around one half of patients admitted to intensive care units were aged 25-49, with only one-third having pre-existing conditions.

If 2019-nCoV were to spread in a similar fashion to Spanish flu, in a global population around 5x that of 1918 – and with an urban population 16x larger – the numbers that could catch the virus are high, plausibly at around 2.5 billion. This is consistent with the upper end of those thought to have caught H1N1, especially if 2019-nCoV does prove to be more infectious than swine flu. The lower estimated mortality rate compared with Spanish flu would mitigate the impact in terms of deaths. Advances in healthcare should also be important with swine flu having more of an impact in Africa and South East Asia where prevention and treatment resources were not as prevalent. However, a 2% mortality rate with expected infections in the billions could still deliver a total number of deaths in the tens of millions, with even more recent lower ex-Hubei mortality rate estimates still suggesting millions of deaths – far exceeding viral outbreaks over recent decades.

Beyond the human cost, the economic cost of an uncontained outbreak would be much higher. Much of the cost of SARS in 2003 was the cost of containing the virus. A more widespread outbreak across China would increasingly involve the costs of the virus itself, in terms of lost income and output, all the more so if the virus spread to the rest of the world. Again, however, the limited historic precedent leaves us grappling to judge the potential cost.

As such, we have considered a "theoretical" approach to estimate the order of magnitude of such a shock. This approach is fraught with uncertainty and given the possible scale of numbers involved, small variations in initial assumptions can equate to material deviations in the forecast. We approach this by considering the impact of the virus on the global economy's potential supply as well as the expected and more dominant demand impact.

The primary implication for global supply comes through the labour force. Although the early estimated mortality rate is 2%, evidence suggested that this might be lower for the prime-age workforce. The biggest economic impact would thus come from lost hours worked, either directly through illness, or from looking after dependants. Assuming an infection rate similar to swine flu, and a mortality rate that remains around the WHO early estimates of 2, but that effects prime-age workers by less than this, we could see a direct supply-side loss of around 1.75%, assuming that workers are affected directly, but also take some time off to care for dependants. Some of this supply-side impact will be mitigated by productivity gains, reducing the total loss. However, this estimate would be a global aggregate. Individual economies could suffer from global trade supply-chain bottle necks, which could exacerbate supply effects.

[6] Vynnycky, E., Trindall, A., Mangtani, P., "Estimates of the reproduction numbers of Spanish influenza using morbidity data" August 2007

[7] Dawood, F. S., Iuliano, A.D., Reed, C., et al "First Global Estimates of 2009 H1N1 Pandemic Mortality Released by CDC-Led Collaboration" Lancet Infect Dis. 26 June 2012

[8] Open Nursing Journal, June 2017

Nevertheless, we would still expect the main effect of the virus to be a demand shock. This would be a combination of impacts of the disease, but also behavioural changes in spending habits that worsen the economic shock. Retail sales fell back by 15% at the height of the SARS virus in key Asian economies in 2003. Broader consumption was also affected by consumers avoiding crowd gatherings, including eating out, going to cinemas etc. Evidence from South East Asian economies most impacted by SARS in 2003, showed contraction in total consumption of 2-3% (Exhibit 8). With consumption accounting for around 50-60% in most international economies, if repeated, this would contribute to around a 1.5% drop in demand.

Exhibit 8: Consumption impact in SE Asia (2003)

Q2-2003 qoq private consumption vs. SARS cases
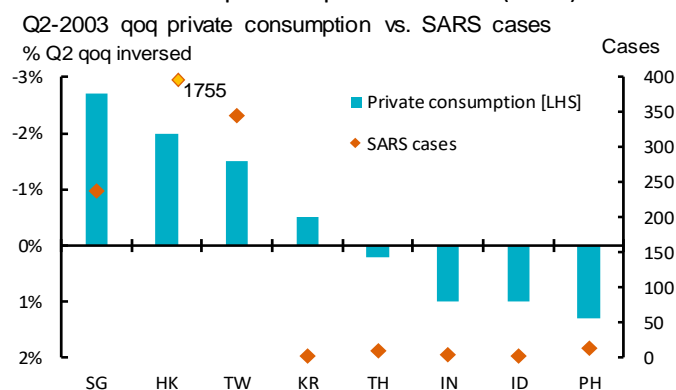
Source: CEIC and AXA IM Research, 10 Feb 2020

Demand is also likely to be affected by falling investment. Falling consumer spending, rising uncertainty and potentially rising finance costs are all likely to reduce investment spending. The precise response of corporates in the face of a widespread outbreak is unknown. However, investment spending fell back by 5% in the mild recession of 2001-02 and by 15% in the financial crisis of 2008-09. With investment representing around 25% of global GDP (higher in developing economies, lower in advanced), a mid-point estimate of the retracement in investment would further reduce demand growth by 2.5ppt. Some companies may need to enact contingency measure investments in this environment, but we consider the net effect of these would be minimal. Financial channels could also exacerbate declines in demand. While market reaction has been muted to date, were there clear signs of a more widespread outbreak, equity markets might well fall, further affecting consumer demand through wealth and sentiment factors, and we could see a widening in credit spreads that would increase the cost – and potentially the ability – of companies to raise funds.

Increased fiscal expenditure would go some way to offset the shortfall in demand, particularly related to healthcare spending. China is already erecting new medical facilities at an incredible pace. More money is likely to be made available for healthcare spend and we tentatively estimate a 1% of

GDP boost on average in healthcare-related spending, providing some mitigating boost to activity.

A simple summation of the effects we discuss suggests an order of magnitude impact that could be around 4-5% of global GDP. To put this in context, global trend growth is around 3%. A contraction of this order of magnitude would suggest only the second outright contraction in world GDP since the IMF kept records from 1945 – a contraction similar to the wake of the financial crisis (World Bank records -1.7% in 2009). We reiterate that this is not a growth forecast, the confidence intervals around each of these estimates are extremely wide. However, we think it serves to illustrate the scale of shock that a widespread outbreak of a virus could deliver to the global economy. As a point of reference, we note that a 2008 paper by the London School of Hygiene and Tropical Medicine[9] estimated a 6-7% GDP shock to EU countries, suggesting a similar order-of-magnitude estimate.

Financial implications of dealing with the virus

To date, the reaction of authorities and markets has been relatively muted. The Chinese authorities have acted aggressively to contain the spread of the virus. They have also begun to add significant liquidity to financial markets (RMB1.7trn) in an attempt to mitigate the negative impact on markets (Chinese stocks are still 6% lower – against -10% at their worst). The Bank of Thailand and the Philippines central bank cut interest rates by 0.25%, while the Singapore Monetary Authority has noted room for manoeuvre around its currency. Most other global central banks have adopted a "careful monitoring" approach.

While it is too early to say with any confidence how widespread this outbreak will be, our analysis suggests that the longer and more widespread it is, the more of an impact will materialise and the greater the reaction will be. The disruption we have seen to date is likely to see other close neighbours to China follow Thailand and the Philippines in terms of monetary policy easing. Over the coming weeks we would expect to see easier monetary policy enacted in a number of Asian economies including, but not limited to, Korea, Singapore, India and Indonesia as the authorities try to pre-empt the contraction in demand likely to face these most vulnerable economies.

Asian economies may also consider a fiscal policy reaction. Singapore and Korea both run budget surpluses at present and could easily increase public spending. Other economies, including, the Philippines and Thailand all have government deficits smaller than the difference between nominal growth and nominal interest rates – suggesting that spending could be increased without increasing overall debt levels. Other economies, such as Indonesia, would only be able to increase spending

[9] Keogh-Brown, M., McDonald, S., Edmunds, W.J., Beutels, P., Smith, R.D., "The macroeconomic costs of a global influenza pandemic", London School of Hygiene and Tropical Medicine", 2008.

by raising the overall debt level. However, with Indonesia debt levels relatively low (around 30% of GDP) this should be possible. Only in India (and more broadly Brazil and South Africa) might the state of public finances restrain the fiscal response.

Should the disease persist, a broader easing in monetary policy is likely. Estimates suggest that the impact on US and Eurozone economies from the 2003 SARS outbreak was less than 0.1%. US Federal Reserve (Fed) Chair Jay Powell asserted that it had no bearing on monetary policy in 2003. A more prolonged, but contained, outbreak of coronavirus might be expected to soften US and Eurozone growth by a little less or a little more than 0.25% respectively this time around. While non-negligible in the context of subdued growth, this might be mitigated in the US by other tailwinds, particularly from looser financial conditions. In the Eurozone it comes against a backdrop of policy constraints for the European Central Bank (ECB). This scenario could see both the Fed and ECB leave policy on hold until later in the year.

A more widespread outbreak, however, with the scale of economic shock that this might entail, would likely require a more proactive reaction. This could be the "material change" required for the Fed to resume an easing in policy. Moreover, if European governments began to increase government spending to combat the disease, or in a more proactive adjustment in discretionary fiscal policy to address downside growth risks, the increase in associated bond issuance could provide some scope for the ECB to increase its quantitative easing (QE) programme. The timing of any such reaction is uncertain, but given the speed of the spread of the virus we are likely to know whether the it has been contained by the time of the next Fed meeting on 18 March.

The case for monetary and fiscal policy reaction could be further affected by other financial market reactions. As noted, we might expect a tightening in financial conditions – driven by a widening in credit spreads and drop in equities – should the coronavirus become a global issue.

Currencies, credit and commodities

At a high level, credit risk premia would be expected to react. As an initial response, we would expect high-yield credit, as a closer equity proxy, to underperform investment grade (IG) credit in beta-adjusted terms. IG is likely to benefit from a further bid for duration, including both a flight to safety and the possibility of further policy accommodation by central banks in response to the pandemic. On balance, US credit could underperform European credit due to the higher energy exposure in US benchmarks as well as the potential for larger amounts of credit purchases by the ECB under its QE program. At the sector level, the impact can differ materially, depending on a company's business exposure to

the fallout from the virus. Banks, along with utilities and telecoms can be seen as more immune to the immediate fallout from the virus, except for those (non-domestic) banks that have a bigger presence in China and East Asia.

Foreign exchange markets will also be impacted by the evolution of the virus. For now, we are seeing a weakening in South East Asian currencies. The Chinese yuan fell by more than 2%, moving back above the important 7.0-mark to the US dollar, before rebounding back below. This has reflected markets anticipating the prospect of looser monetary policy in China and in close neighbours most affected by the coronavirus. Should the virus prove more persistent we would expect a different evolution. While Asian currencies would likely continue to come under pressure against the US dollar, we might expect more weakness in the euro – already below November's lows at $1.095. This would reflect the risk-aversion boost to the dollar, but more specifically the greater impact that a prolonged disruption to China's activity would have on global trade and the Eurozone economy relative to the US. However, we suggest that should the virus spread more widely, pushing towards a broader easing in global monetary policy, the euro may begin to gain against the US dollar as expectations for monetary policy easing in the US outstrip those in the Eurozone.

We would also likely see a more persistent impact on commodities. Chinese energy executives are already said to be expecting a 25% drop in oil demand in February because of the virus[10]. This is around 3m barrels a day and 3% of global demand. BP have also warned that the virus could cut global oil demand by 300-500k barrels on average in 2020 – up to 40% of the expected demand increase for the year. Oil prices have fallen by as much as 17% from pre-virus levels, although they are currently off their lows with Brent Crude just over$54/barrel as of writing. Copper prices have also fallen sharply, with the LME benchmark down 11% at worst.

This fall in commodity prices – anticipating weaker global demand even now – will have a number of second-round implications for the global economy. In emerging market economies, it will put renewed strain on commodity producers, while US high-yield credit spreads are already rising as energy prices impact US producers.

There will also be an impact on the inflation outlook. The fall in commodity prices will mechanically lower the inflation outlook for all economies, the effect growing as price drops persist or extend. Over time, the demand shock from this virus would outstrip the supply shock. This suggests that excess supply would grow in the global economy, creating more medium-term disinflationary pressures. Finally, all of this is likely to further weigh on inflation expectations, which at a time of persistently low inflation, has made it more difficult for central banks to meet their inflation targets.

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[10] "China braced for 25% slide in domestic oil demand as industrial activity hit". Financial Times, 6 February 2020.

Annex A – Greater global interconnectedness to spread virus impact

2003 Country	PPP % Global GDP	Services (%GDP)	Investment (%GDP)	Tourism (%Imports)	Exports to China (%GDP)	Imports to China (%GDP)	Foreign trade (%GDP)
US	19.7	74.6	5.4	5.4	0.2	1.4	17.7
Eurozone	17.2	64.0	7.2	7.2	0.4	1.0	55.3
Germany	4.5	63.3	10.1	10.1	0.8	1.0	54.3
France	3.2	68.1	7.1	7.1	0.3	0.6	43.0
Italy	3.0	64.6	6.6	6.6	0.3	0.7	37.9
Spain	2.0	59.9	4.5	4.5	0.1	0.7	40.3
UK	3.1	68.1	11.0	11.0	0.2	1.0	34.3
Japan	6.3	68.4	8.1	8.1	1.3	1.7	19.2
Switzerland	0.5	69.2	5.9	5.9	0.5	0.5	58.1
Canada	1.8	62.7	5.5	5.5	0.4	1.6	58.0
Australia	1.1	64.3	9.6	9.6	1.1	1.8	34.2
Singapore	0.3	64.4	4.9	4.9	10.4	11.3	303.3
Sweden	0.5	61.6	8.3	8.3	0.7	0.8	55.9
Finland	0.3	55.2	5.8	5.8	0.9	0.8	55.9
China	8.7	42.0	4.1	11.7	NA	NA	51.3
India	4.5	44.7	4.7	3.9	0.4	0.6	21.6
Korea	1.7	53.6	5.2	5.6	5.0	3.1	54.8
Thailand	1.0	52.5	4.2	4.7	3.7	4.0	102.5
Hong Kong	0.3	87.7	5.0	4.0	NA	NA	286.3
Malaysia	0.6	46.7	3.5	5.3	5.7	6.1	170.6
Indonesia	2.0	41.1	7.8	6.0	1.5	1.2	45.3
Brazil	3.0	56.4	4.6	10.2	0.8	0.4	22.2
Mexico	2.3	60.4	3.8	3.0	0.1	1.4	46.7
Argentina	0.7	51.0	16.0	15.2	1.8	0.5	34.0
Russia	3.5	53.8	13.3	10.9	1.8	0.7	49.3
Turkey	1.3	52.9	2.9	2.1	0.2	0.8	37.4
Poland	0.9	58.0	4.2	3.6	0.1	1.3	56.1
Saudi Arabia	1.4	41.8	7.6	9.3	4.1	1.0	62.5
Egypt	0.9	44.9	7.5	3.4	0.1	0.6	24.6
Pakistan	0.7	49.0	7.7	5.0	0.3	1.1	30.0
Nigeria	0.7	39.2	9.5	16.1	0.1	1.0	33.3
South Africa	0.7	60.1	8.4	6.1	0.5	1.3	43.5
Cambodia	0.0	38.2	1.9	5.0	0.1	4.8	100.4
Philippines	0.5	52.7	4.5	10.8	2.6	2.1	93.9
Vietnam	0.4	38.0	NA	2.3	4.8	7.9	114.8
Nepal	0.1	44.1	6.2	7.5	0.0	1.0	38.2
Sri Lanka	0.2	58.3	6.0	9.5	0.1	1.5	62.5
UAE	0.5	49.0	NA	NA	0.6	3.1	95.9

Today Country	PPP % Global GDP	Services (%GDP)	Investment (%GDP)	Tourism (%Imports)	Exports to China (%GDP)	Imports to China (%GDP)	Foreign trade (%GDP)
US	15.1	77.4	21.1	6.0	0.6	2.6	20.8
Eurozone	11.4	66.0	21.7	5.3	1.3	2.5	71.2
Germany	3.1	61.8	21.8	6.6	2.8	2.3	72.1
France	2.2	70.3	23.3	5.9	0.9	1.2	45.2
Italy	1.7	66.3	17.6	5.1	0.7	1.8	50.3
Spain	1.4	67.7	22.2	5.4	0.5	1.9	51.7
UK	2.2	71.0	16.4	8.5	1.0	2.2	40.6
Japan	4.1	69.1	24.6	2.2	2.9	3.5	29.9
Switzerland	0.4	71.4	23.3	5.2	4.3	2.1	83.7
Canada	1.3	66.8	22.6	5.8	1.2	3.6	53.6
Australia	1.0	66.6	22.5	13.6	6.1	4.1	34.4
Singapore	0.4	69.4	27.2	5.0	13.9	13.6	215.1
Sweden	0.4	64.7	26.2	7.6	1.4	1.6	60.4
Finland	0.2	59.4	23.8	6.9	1.5	0.9	55.9
China	19.3	52.2	43.4	11.7	NA	NA	34.0
India	8.0	49.1	31.3	3.9	0.6	2.7	30.8
Korea	1.6	53.6	31.4	5.6	9.4	6.2	70.4
Thailand	1.0	56.9	24.9	4.7	6.0	9.9	99.4
Hong Kong	0.3	88.5	18.9	4.0	NA	NA	330.0
Malaysia	0.8	53.0	22.5	5.3	9.6	12.1	129.6
Indonesia	2.6	43.4	34.5	6.0	2.7	4.5	35.4
Brazil	2.4	62.6	15.7	10.2	3.4	2.0	22.9
Mexico	1.9	60.1	21.7	3.0	0.6	7.2	76.0
Argentina	0.6	55.5	18.5	15.2	0.8	2.3	24.4
Russia	3.1	54.1	23.1	10.9	3.4	3.1	41.8
Turkey	1.7	54.3	25.6	2.1	0.4	2.7	50.7
Poland	0.9	56.8	21.0	3.6	0.4	3.6	90.0
Saudi Arabia	1.3	48.4	24.9	9.3	4.9	2.7	55.2
Egypt	1.0	51.4	17.3	3.4	0.1	2.4	39.7
Pakistan	0.8	52.7	15.4	5.0	0.6	4.5	26.7
Nigeria	0.9	52.0	14.2	16.1	0.8	2.1	25.8
South Africa	0.6	61.0	17.6	6.1	2.4	4.9	56.5
Cambodia	0.1	39.5	23.2	5.0	4.0	27.7	136.2
Philippines	0.7	60.0	29.6	10.8	2.6	6.5	55.1
Vietnam	0.6	41.1	26.3	2.3	17.1	27.1	199.8
Nepal	0.1	51.4	59.9	7.5	0.1	4.7	49.3
Sri Lanka	0.2	56.8	28.8	9.5	0.3	4.7	38.7
UAE	0.5	52.5	30.6	NA	3.7	9.2	144.5

Source: Datastream and AXA IM Research, as of 10 Feb. 2020

Annex B – Risk factors for spread of virus

2003 Country	Tourism flow with China (%)	Population density	Urban population (% Total pop)	Health care per capita (USD)
US	6.4	32	79.6	5995.1
Eurozone	29.5	122	73.6	2556.0
Germany	6.8	237	75.6	3222.8
France	6.1	114	76.6	3115.2
Italy	4.2	195	67.5	2246.1
Spain	3.6	85	76.8	1687.9
UK	5.5	247	79.3	2462.1
Japan	1.2	350	83.2	2694.4
Switzerland	1.0	186	73.4	5001.9
Canada	2.3	3	80.0	2690.5
Australia	0.5	3	84.3	2370.9
Singapore	0.6	5990	100.0	826.6
Sweden	0.5	22	84.2	3277.4
Finland	1.1	17	82.6	2571.7
China	3.5	137	39.8	61.6
India	0.5	374	28.6	23.6
Korea	0.8	495	80.7	700.4
Thailand	0.8	126	34.9	78.8
Hong Kong	4.6	6410	100.0	246.4
Malaysia	2.8	75	64.8	175.2
Indonesia	0.5	122	44.4	27.0
Brazil	0.5	22	82.2	211.3
Mexico	1.9	53	75.7	413.0
Argentina	0.4	14	89.7	277.9
Russia	2.8	9	73.4	167.4
Turkey	1.3	86	66.6	243.5
Poland	3.4	125	61.7	354.1
Saudi Arabia	0.7	10	80.5	369.2
Egypt	0.6	73	42.9	55.5
Pakistan	0.0	199	33.6	16.1
Nigeria	0.1	145	37.4	38.5
South Africa	NA	39	58.5	308.1
Cambodia	0.0	73	18.9	24.4
Philippines	0.2	279	45.9	32.8
Vietnam	0.2	265	26.1	25.0
Nepal	0.0	175	14.5	14.3
Sri Lanka	0.1	307	18.3	38.8
UAE	0.4	52	81.5	907.6

Today Country	Tourism flow with China (%)	Population density	Urban population (% Total pop)	Health care per capita (USD)
US	5.7	36	82.3	9402.5
Eurozone	22.7	128	77.0	4134.7
Germany	4.5	237	77.3	5410.6
France	4.0	122	80.4	4959.0
Italy	3.1	205	70.4	3257.8
Spain	3.4	94	80.3	2658.3
UK	3.8	275	83.4	3934.8
Japan	1.6	347	91.6	3703.0
Switzerland	0.9	216	73.8	9673.5
Canada	1.9	4	81.4	5291.7
Australia	0.7	3	86.0	6031.1
Singapore	0.8	7953	100.0	2752.3
Sweden	0.4	25	87.4	6807.7
Finland	1.0	18	85.4	4612.3
China	7.0	148	59.2	419.7
India	1.4	455	34.0	75.0
Korea	1.4	530	81.5	2060.2
Thailand	1.5	136	50.0	227.5
Hong Kong	4.1	7096	100.0	NA
Malaysia	NA	96	76.0	455.8
Indonesia	0.8	148	55.3	99.4
Brazil	0.6	25	86.6	947.4
Mexico	2.0	65	80.2	677.2
Argentina	0.7	16	91.9	605.2
Russia	2.2	9	74.4	892.9
Turkey	1.6	107	75.1	567.6
Poland	2.2	124	60.1	910.3
Saudi Arabia	1.3	16	83.8	1147.4
Egypt	NA	99	42.7	177.8
Pakistan	NA	275	36.7	36.2
Nigeria	NA	215	50.3	117.5
South Africa	NA	48	66.4	570.2
Cambodia	0.3	92	23.4	61.3
Philippines	0.3	358	46.9	135.2
Vietnam	0.7	308	35.9	142.4
Nepal	0.1	196	19.7	39.9
Sri Lanka	0.1	346	18.5	127.3
UAE	NA	136	86.5	1610.8

Source: Datastream and AXA IM Research, as of 10 Feb. 2020

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